STUDIES ON TROMBIDIIDAE (ACARINA).

SOME OBSERVATIONS ON THE BIOLOGY OF THE MICROTROMBIDIINAE.

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(Three Text-figures.)

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The Australian members of the subfamily Microtrombidiinae Thor 1935 have recently been restudied by Womersley (*Rec. S. Aust. Mus.*, viii (2), 1945, 293–355) and he described the larva of *Camerotrombidium simile* (Hirst 1928). Boshell and Kerr (*Revist. Acad. Colomb. Cienc. Exact. Fis. Quim. y Nat.*, xvii, 1942, 110–127) have described the larva of their adult species *Manriquia bequaerti* B. and K. 1942, which Womersley (1945, 294) refers to the genus *Echinothrombium* Womersley 1937. Other correlations of adults and larvae in this subfamily have been suggested in Europe, apparently on less secure grounds; and also for some Australian material (see Womersley, *J. Linn. Soc. Lond.*, Zool., xl, 1936, 114–115).

In this paper is placed on record that in an Australian species of this subfamily, *Microtrombidium hirsutum* Womersley 1945, the larval stage is suppressed, the eggs hatching direct to nymphs. As far as I am aware, such a life history has not previously been reported in the Trombidiidae, although well known for other Acarina. The egg and nymph are described and figured here. In addition an outline drawing of the adult of the closely related *Microtrombidium karriense* Womersley 1934 is given.

Microtrombidiinae Thor 1935.

Ottoniinae Thor 1935; Womersley 1942. Microtrombidiinae Thor 1935; Womersley 1937, 1945.

Microtrombidium Haller 1882.

Jber. Ver. Württemb., xxxviii, 1882, 322. Genotype, *M. purpureum* Haller 1882; [non] *Trombidium pusillum* Hermann 1804 (see Willman, *Zool. Anz.*, cxxxi (9–10), 1940, 255).

Microtrombidium hirsutum Womersley 1945. Figs. 1, B–H, 2, 3.

Rec. S. Aust. Mus., viii (2), 1945, 312. *Microtrombidium karriensis* Wom. 1937, Ibid., vi (1), 87 (part, locality record only).

Adult: Fig. 1, E, F. This has recently been separated by Womersley from *M. karriense* Wom. 1934. Figures of the dorsal setae, for comparison with those of the nymph, are given.

Egg: Fig. 1, B–D. Red. Spheroidal to ovoid or somewhat irregular. Surface smooth or very slightly wrinkled, not patterned. Average size about 350μ long by 300μ across. See further under notes on biology.

Nymph: Figs. 1, G, H; 2, 3. Red. Body cordate as in the adult, legs somewhat more thick-set. Body somewhat flattened dorsoventrally; body length (to anterior end of crista) 400μ average (varied from 350–450μ); width 300μ average (varied from 250–350μ). Crista 83μ long from anterior tip to centres of sensillae. Sensillary setae 2, simple, filiform, 80μ long; centres of sensillae 16μ apart. Eyes 2 + 2, on shields, behind middle of crista. Dorsal setae long, slender, heavily ciliated, increasing gradually in length posteriorly and laterally over the dorsum, 18–52μ long. Ventral setae similar

to dorsal. Genitalia with 2 pairs of suckers. Palpi stout with stout accessory claw, with simpler arrangement of setae than adult; only one pectine of setae present on the palpal tibia, this on the dorsal side. One stouter seta (or spine) present at about the centre of the ventral surface of the palpal tibia. Chelicerae falciform, inner edge serrate. Legs comparatively more thick-set than in adult; I 430μ long, II 315μ, III 300μ, IV 380μ (all lengths including coxae and claws); 2 claws to each tarsus, strong, simple, falciform. Tarsus I 117μ long by 68μ high; metatarsus I 59μ greatest length by 37μ high; a number of simple sensory setae are present on the legs, especially terminally, in addition to the normal ciliated setae.

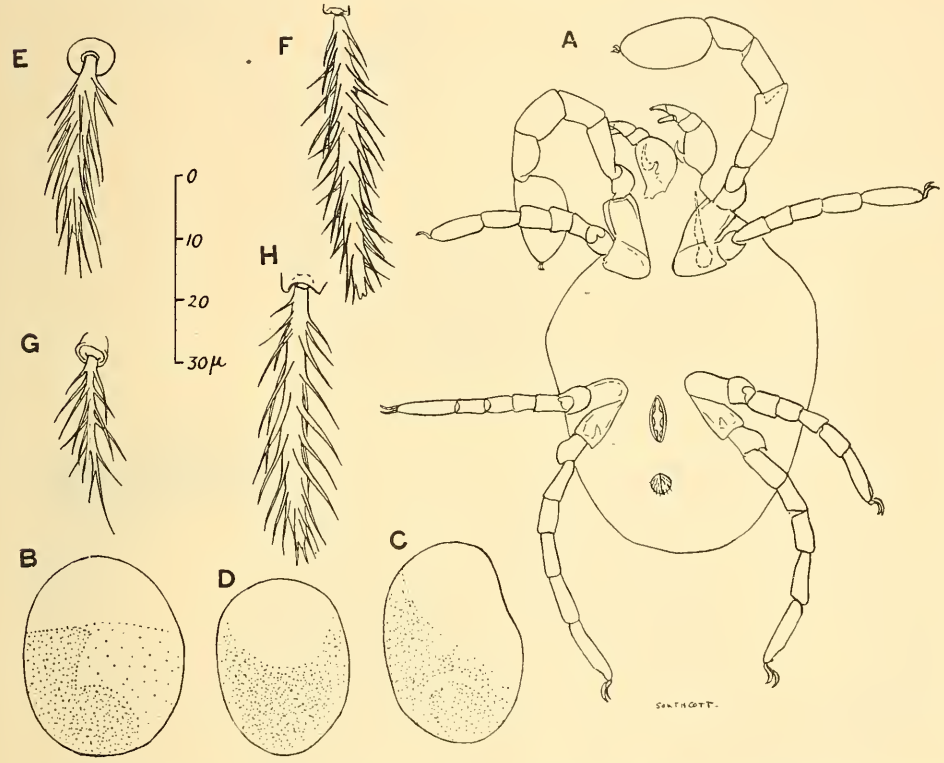

Fig. 1.—*Microtrombidium karriense* Wom. 1934, and *Microtrombidium hirsutum* Wom. 1945. A, *M. karriense*, entire, outline, ventral; B-H, *M. hirsutum*. B, C, Egg, lateral; D, Egg, dorsal; E, Anterior dorsal seta of adult; F, Posterior dorsal seta of adult; G, Anterior dorsal seta of nymph; H, Posterior dorsal seta of nymph.

Biology: The adult (ACB 31) was captured by myself in a damp situation at Waterfall Gulley, in the Mt. Lofty Ranges, South Australia, on 24th August, 1938. It was confined to a tube with a small amount of damp clay and sand from the same locality. Initially the tube was examined weekly. Up till 24th September, 1938, the adult remained plump, and became active on stimulation; no eggs nor larvae yet seen in the tube.

1.x.38. Adult appears somewhat shrunken; a cluster of 6 red translucent eggs present, which are very slightly wrinkled on the surface. The eggs large in comparison with the adult mite. Adult active on stimulation. Tube wet.

8.x.38. Some lighter patches appearing in the eggs.

9.x.38. Eye-spots of embryos clearly visible (not shown in text-figures).

16.x.38. Leg somites of one embryo visible. Eggs now examined at least once daily.

18.x.38. Text-figures of eggs made.
24.x.38. The first egg hatched out, to a nymph. This nymph removed and mounted.
25.x.38. Four more nymphs hatched out. Adult active, well.
26.x.38. Adult and one nymph removed and mounted.
29.x.38. Tube now dry. At least one nymph seen alive.
5.xi.38. Two nymphs seen wandering around tube.
12.xi.38. One nymph only seen alive.
21.xi.38. Tube dry. No mites seen alive.

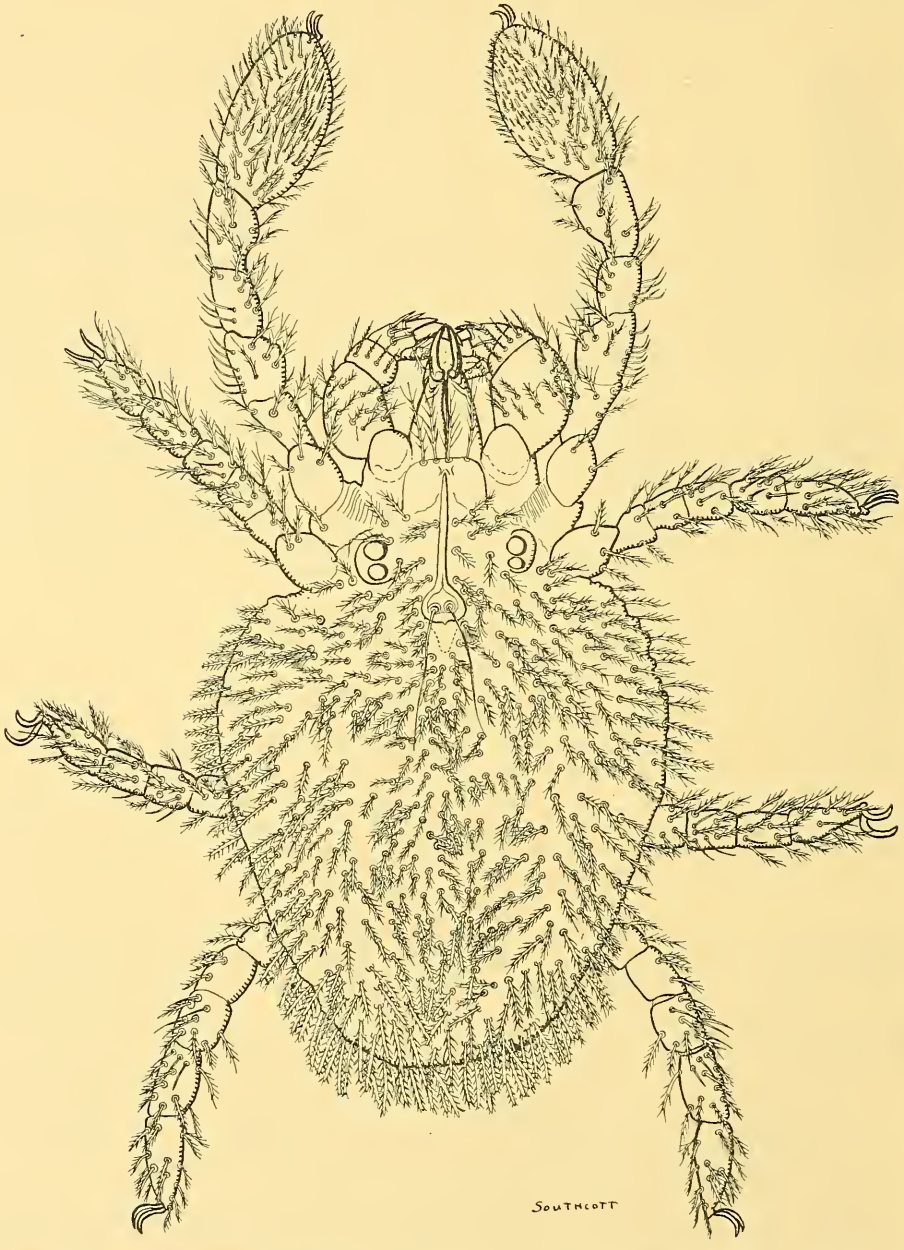

Fig. 2.—*Microtrombidium hirsutum* Wom. 1945. Nymph, freshly emerged, dorsal aspect.

9.xii.38. Contents of tube emptied out and examined carefully. Four dead nymphs were found, and several scraps of egg-skins. No unhatched egg found. The nymphs and egg-skins were mounted. No signs in any way referable to larvae were found. (Thus 6 eggs and 6 nymphs are accounted for.)

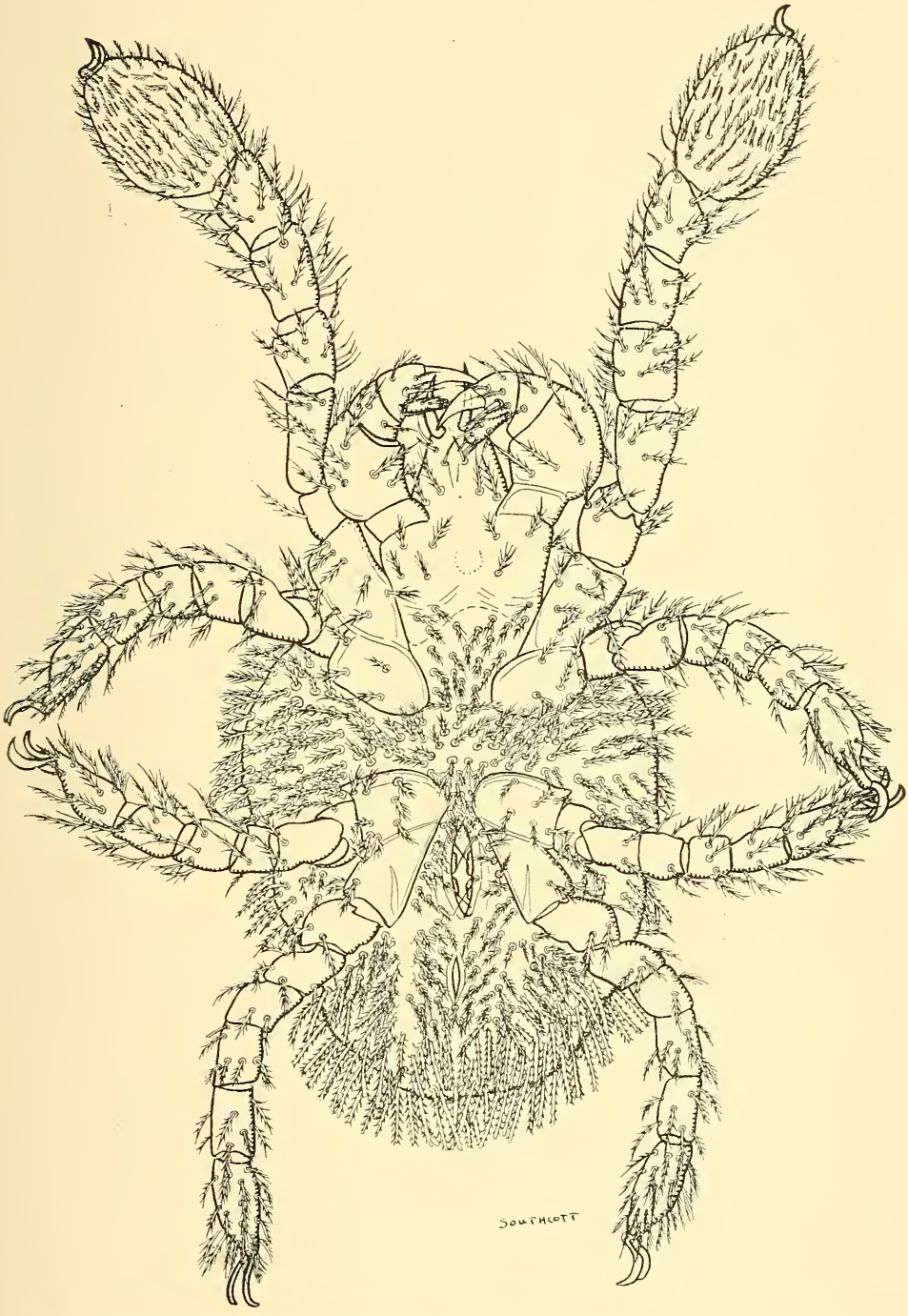

Fig. 3.—*Microtrombidium hirsutum* Wom. 1945. Nymph, freshly emerged, ventral aspect.

Remarks: It is considered that the statement made here regarding the absence of a larval stage, for this species at least, is firmly established. The time for development in the egg, from laying to hatching, was 28·5 ± 3·5 days (for 4 of the 6 eggs).

I have had the opportunity of comparing the adult specimen above with the type of *M. hirsutum*, and other type material, for which I wish to thank Mr. Womersley. The adult agrees completely with the type of *M. hirsutum*. The considerable reduction and simplification of the palpal spines and setae of the nymph is of some interest from the point of view of generic classification.

MICROTROMBIDIUM KARRIENSE Womersley 1934. Fig. 1, A.

Microtrombidium karriensis Womersley, *Rec. S. Aust. Mus.*, v (2), 1934, 191. *Microtrombidium* (*M.*) *karriensis, karriense* Womersley, Ibid., vi (1), 1937, 87. *Microtrombidium karriensis* Womersley, Ibid., viii (2), 1945, 310.

This species has recently been redescribed by Womersley. As the type is now in a damaged condition, an outline drawing of the ventral surface of the entire mite, made some time ago, is given here.